```
=> file reg
FILE 'REGISTRY' ENTERED AT 14:34:17 ON 12 JUN 2003
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STRUCTURE FILE UPDATES:   11 JUN 2003  HIGHEST RN 529474-19-9
DICTIONARY FILE UPDATES:  11 JUN 2003  HIGHEST RN 529474-19-9

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2003

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

Crossover limits have been increased.  See HELP CROSSOVER for details.

Experimental and calculated property data are now available.  See HELP
PROPERTIES for more information.  See STNote 27, Searching Properties
in the CAS Registry File, for complete details:
http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf

=> file hcaplus
FILE 'HCAPLUS' ENTERED AT 14:34:21 ON 12 JUN 2003
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FILE COVERS 1907 - 12 Jun 2003  VOL 138 ISS 24
FILE LAST UPDATED: 11 Jun 2003  (20030611/ED)

 This file contains CAS Registry Numbers for easy and accurate
 substance identification.


=> d que l40
L7             1 SEA FILE=REGISTRY ABB=ON  HYDROGEN/CN
L8             1 SEA FILE=REGISTRY ABB=ON  OXYGEN/CN
L11            1 SEA FILE=REGISTRY ABB=ON  "2-PROPANOL, 2-METHYL-"/CN
L12            0 SEA FILE=REGISTRY ABB=ON  METAXYLENE
L13            1 SEA FILE=REGISTRY ABB=ON  ORTHOXYLENE/CN
L14            0 SEA FILE=REGISTRY ABB=ON  PARAXYLENE
L16            6 SEA FILE=REGISTRY ABB=ON  ETHYLENE/CN OR PROPANE/CN OR
                 PORPYLENE/CN OR N-BUTANE/CN OR ISOBUTANE/CN OR ISOBUTYLENE/CN
                 OR T-BUTYL ALCOHOL/CN OR ORTHOXYLENE/CN OR METAXYLENE/CN OR
```

```
                PARAXYLENE/CN
L17             8 SEA FILE=REGISTRY ABB=ON  L16 OR PROPYLENE/CN OR L11 OR L12 OR
                  L13 OR L14
L18             1 SEA FILE=REGISTRY ABB=ON  PERFLUOROPENTANE/CN
L19             1 SEA FILE=REGISTRY ABB=ON  PERFLUOROHEXANE/CN
L20             1 SEA FILE=REGISTRY ABB=ON  PERFLUOROHEPTANE/CN
L21             1 SEA FILE=REGISTRY ABB=ON  PERFLUOROOCTANE/CN
L22             4 SEA FILE=REGISTRY ABB=ON  (L18 OR L19 OR L20 OR L21)
L23       2022822 SEA FILE=HCAPLUS ABB=ON  L7 OR H2 OR HYDROGEN OR FEED# OR
                  HYDROCARBON# OR L17 OR ETHYLENE OR PROPANE OR PROPYLENE OR
                  N-BUTANE OR ISOBUTANE OR ISOBUTYLENE OR T(W)BUTYL (W)ALCOHOL
                  OR ORTHOXYLENE OR METAXYLENE OR PARAXYLENE
L24         35501 SEA FILE=HCAPLUS ABB=ON  L23(L)OXIDI?
L25       1460421 SEA FILE=HCAPLUS ABB=ON  L8 OR O2 OR OXYGEN OR AIR
L26         11818 SEA FILE=HCAPLUS ABB=ON  L24 AND L25
L27         20572 SEA FILE=HCAPLUS ABB=ON  L22 OR ?FLUORO?(5A)(SOLVENT? OR
                  SOLUTION?)
L28            16 SEA FILE=HCAPLUS ABB=ON  L26 AND L27
L29            10 SEA FILE=HCAPLUS ABB=ON  L28 AND (CAT/RL OR CATALY?)
L30             7 SEA FILE=HCAPLUS ABB=ON  L28 AND (AU OR AG OR PT OR PD OR IR
                  OR RH OR HG OR RU OR OS OR GOLD OR SILVER OR PLATIN? OR
                  PALLAD? OR IRIDIUM OR RHENIUM OR MERCUR? OR RUTHEN? OR OSMIUM)
L31            12 SEA FILE=HCAPLUS ABB=ON  L29 OR L30
L32            12 SEA FILE=HCAPLUS ABB=ON  L28 AND OXIDATION/IT
L33            13 SEA FILE=HCAPLUS ABB=ON  L31 OR L32
L35           276 SEA FILE=HCAPLUS ABB=ON  L26 AND ?FLUORO?
L36           118 SEA FILE=HCAPLUS ABB=ON  L35 AND OXIDATION/IT
L38            19 SEA FILE=HCAPLUS ABB=ON  L36 AND (AU OR AG OR PT OR PD OR IR
                  OR RH OR HG OR RU OR OS OR GOLD OR SILVER OR PLATIN? OR
                  PALLAD? OR IRIDIUM OR RHENIUM OR MERCUR? OR RUTHEN? OR
                  OSMIUM)(L)(CAT/RL OR CATL?)
L39             4 SEA FILE=HCAPLUS ABB=ON  L38 AND (SOLVENT# OR SOLUTION?)
L40            14 SEA FILE=HCAPLUS ABB=ON  L33 OR L39

=> file wpix
FILE 'WPIX' ENTERED AT 14:34:32 ON 12 JUN 2003
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FILE LAST UPDATED:          9 JUN 2003      <20030609/UP>
MOST RECENT DERWENT UPDATE:     200336        <200336/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> NEW WEEKLY SDI FREQUENCY AVAILABLE --> see NEWS  <<<

>>> SLART (Simultaneous Left and Right Truncation) is now
    available in the /ABEX field. An additional search field
    /BIX is also provided which comprises both /BI and /ABEX <<<

>>> PATENT IMAGES AVAILABLE FOR PRINT AND DISPLAY <<<

>>> FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES,
    SEE http://www.derwent.com/dwpi/updates/dwpicov/index.html <<<

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE,
    PLEASE VISIT:
 http://www.stn-international.de/training_center/patents/stn_guide.pdf <<<
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```
=> d que l34
L7             1 SEA FILE=REGISTRY ABB=ON  HYDROGEN/CN
L8             1 SEA FILE=REGISTRY ABB=ON  OXYGEN/CN
L11            1 SEA FILE=REGISTRY ABB=ON  "2-PROPANOL, 2-METHYL-"/CN
L12            0 SEA FILE=REGISTRY ABB=ON  METAXYLENE
L13            1 SEA FILE=REGISTRY ABB=ON  ORTHOXYLENE/CN
L14            0 SEA FILE=REGISTRY ABB=ON  PARAXYLENE
L16            6 SEA FILE=REGISTRY ABB=ON  ETHYLENE/CN OR PROPANE/CN OR
                 PORPYLENE/CN OR N-BUTANE/CN OR ISOBUTANE/CN OR ISOBUTYLENE/CN
                 OR T-BUTYL ALCOHOL/CN OR ORTHOXYLENE/CN OR METAXYLENE/CN OR
                 PARAXYLENE/CN
L17            8 SEA FILE=REGISTRY ABB=ON  L16 OR PROPYLENE/CN OR L11 OR L12 OR
                 L13 OR L14
L18            1 SEA FILE=REGISTRY ABB=ON  PERFLUOROPENTANE/CN
L19            1 SEA FILE=REGISTRY ABB=ON  PERFLUOROHEXANE/CN
L20            1 SEA FILE=REGISTRY ABB=ON  PERFLUOROHEPTANE/CN
L21            1 SEA FILE=REGISTRY ABB=ON  PERFLUOROOCTANE/CN
L22            4 SEA FILE=REGISTRY ABB=ON  (L18 OR L19 OR L20 OR L21)
L23      2022822 SEA FILE=HCAPLUS ABB=ON  L7 OR H2 OR HYDROGEN OR FEED# OR
                 HYDROCARBON# OR L17 OR ETHYLENE OR PROPANE OR PROPYLENE OR
                 N-BUTANE OR ISOBUTANE OR ISOBUTYLENE OR T(W)BUTYL (W)ALCOHOL
                 OR ORTHOXYLENE OR METAXYLENE OR PARAXYLENE
L24        35501 SEA FILE=HCAPLUS ABB=ON  L23(L)OXIDI?
L25      1460421 SEA FILE=HCAPLUS ABB=ON  L8 OR O2 OR OXYGEN OR AIR
L26        11818 SEA FILE=HCAPLUS ABB=ON  L24 AND L25
L27        20572 SEA FILE=HCAPLUS ABB=ON  L22 OR ?FLUORO?(5A)(SOLVENT? OR
                 SOLUTION?)
L28           16 SEA FILE=HCAPLUS ABB=ON  L26 AND L27
L29           10 SEA FILE=HCAPLUS ABB=ON  L28 AND (CAT/RL OR CATALY?)
L30            7 SEA FILE=HCAPLUS ABB=ON  L28 AND (AU OR AG OR PT OR PD OR IR
                 OR RH OR HG OR RU OR OS OR GOLD OR SILVER OR PLATIN? OR
                 PALLAD? OR IRIDIUM OR RHENIUM OR MERCUR? OR RUTHEN? OR OSMIUM)
L31           12 SEA FILE=HCAPLUS ABB=ON  L29 OR L30
L32           12 SEA FILE=HCAPLUS ABB=ON  L28 AND OXIDATION/IT
L34            7 SEA FILE=WPIX ABB=ON  L31 OR L32


=> dup rem l40 l34
FILE 'HCAPLUS' ENTERED AT 14:34:45 ON 12 JUN 2003
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PROCESSING COMPLETED FOR L40
PROCESSING COMPLETED FOR L34
L41           21 DUP REM L40 L34 (0 DUPLICATES REMOVED)

=> d l41 all 1-21 hitstr

L41  ANSWER 1 OF 21  HCAPLUS  COPYRIGHT 2003 ACS
AN   2003:355495  HCAPLUS
DN   138:356006
```

KATHLEEN FULLER EIC 1700/PARKER LAW 308-4290

TI Oxidation-extraction removal of organosulfur compounds from hydrocarbon fuels by contact with ionic liquids
IN Schoonover, Roger E.
PA USA
SO U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM C10G029-00
NCL 208230000
CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003085156	A1	20030508	US 2002-289931	20021106
	WO 2003040264	A1	20030515	WO 2002-US35749	20021106

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI US 2001-331076P P 20011106

AB Sulfur compds. are removed from a fuel stream by extn. of the fuel in an ionic liq. (selected from quaternary ammonium compds. and phosphonium compds.), followed by sepn. of the **hydrocarbon** phase, optionally in the presence of an **oxidizing** agent which **oxidizes** the sulfur compds. to sulfoxides or sulfones during the extn. step. Preferred ionic liqs. include alkylpyridinium, dialkylimidazolium, trialkylimidazolium, and trialkylamine cations. Fuels that can be desulfurized by this method are gasoline, crude petroleum, liquefied petroleum gases, diesel fuel, jet fuel, and distillate fuel oils. Desulfurization is carried out at .ltoreq.200.degree., .ltoreq.50 atm., for .ltoreq.1 h.

ST hydrocarbon fuel desulfurization extn ionic liq; organosulfur oxidn fuel desulfurization ionic liq; quaternary ammonium ionic liq petroleum desulfurization; phosphonium ionic liq petroleum desulfurization

IT Diesel fuel
Jet aircraft fuel
(desulfurization of; **oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT Gasoline
RL: PUR (Purification or recovery); PREP (Preparation)
(desulfurization of; **oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT Petroleum refining
(desulfurization; **oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT Petroleum refining
(extn.-**oxidn.**; **oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT Petroleum products
(gases, liquefied, desulfurization of; **oxidn.**-extn. removal

of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT Onium compounds
RL: NUU (Other use, unclassified); USES (Uses)
(imidazolium compds., ionic liq. extn. **solvent; oxidn**.-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT Phosphonium compounds
Pyridinium compounds
Quaternary ammonium compounds, uses
RL: NUU (Other use, unclassified); USES (Uses)
(ionic liq. extn. **solvent; oxidn**.-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT **Air**
(**oxidizing** agent; **oxidn**.-extn. removal of organosulfur compds. from **hydrocarbon** fuels by contact with ionic liqs.)

IT Peroxides, uses
Peroxy acids
RL: NUU (Other use, unclassified); USES (Uses)
(**oxidizing** agent; **oxidn**.-extn. removal of organosulfur compds. from **hydrocarbon** fuels by contact with ionic liqs.)

IT Ionic liquids
(**oxidn**.-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

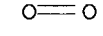
IT Sulfones
RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); REM (Removal or disposal); FORM (Formation, nonpreparative); PROC (Process)
(removal of; **oxidn**.-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT Disulfides
Sulfides, processes
Thiols (organic), processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)
(removal of; **oxidn**.-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT 1813-60-1, Tetrabutylphosphonium **tetrafluoroborate** 2932-48-1, Trimethylphenylammonium **hexafluorophosphate** 12076-71-0, Trimethylamine tetrachloroaluminate 14791-97-0, Pyridinium **fluorosulfonate** 80432-09-3 145022-44-2, 1-Ethyl-3-methylimidazolium triflate 155371-19-0, 1-Ethyl-3-methylimidazolium **hexafluorophosphate** 174501-64-5, 1-Butyl-3-methylimidazolium **hexafluorophosphate** 174501-65-6, 1-Butyl-3-methylimidazolium **tetrafluoroborate** 174645-81-9 174899-66-2, 1-Butyl-3-methylimidazolium **trifluoromethanesulfonate** 186088-50-6, N-Butylpyridinium **hexafluorophosphate**
RL: NUU (Other use, unclassified); USES (Uses)
(ionic liq. extn. **solvent; oxidn**.-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)

IT **7782-44-7, Oxygen**, uses 10028-15-6, Ozone, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**oxidizing** agent; **oxidn**.-extn. removal of organosulfur compds. from **hydrocarbon** fuels by contact with

ionic liqs.)
IT 7440-02-0, Nickel, uses 7440-05-3, **Palladium**, uses
7440-06-4, **Platinum**, uses 7440-62-2, Vanadium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(**oxidn. catalyst**; **oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)
IT 67-71-0, Dimethyl sulfone 95-15-8, Benzothiophene 95-15-8D, Benzothiophene, derivs. 110-02-1D, Thiophene, derivs. 110-66-7, Pentanethiol 132-65-0D, Dibenzothiophene, derivs. 825-44-5, Benzothiophene sulfone 25154-40-9, Methylthiophene
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)
(removal of; **oxidn.**-extn. removal of organosulfur compds. from hydrocarbon fuels by contact with ionic liqs.)
IT **7782-44-7, Oxygen**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**oxidizing** agent; **oxidn.**-extn. removal of organosulfur compds. from **hydrocarbon** fuels by contact with ionic liqs.)
RN 7782-44-7 HCAPLUS
CN Oxygen (8CI, 9CI) (CA INDEX NAME)



L41 ANSWER 2 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 2003:197057 HCAPLUS
DN 138:187400
TI Method for oxidation of hydrocarbons to acids, and particularly for the production of adipic acid by oxidation of cyclohexane, cyclohexanol, and/or cyclohexanone, using manganese **catalysts** in the presence of aromatic organic acids
IN Bonnet, Didier; Fache, Eric; Simonato, Jean Pierre
PA Rhodia Polyamide Intermediates, Fr.
SO Fr. Demande, 18 pp.
CODEN: FRXXBL
DT Patent
LA French
IC ICM C07C051-31
ICS C07C051-215; C07C055-14
CC 23-16 (Aliphatic Compounds)
Section cross-reference(s): 24, 35, 45
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI FR 2828194	A1	20030207	FR 2001-10427	20010803
WO 2003014055	A1	20030220	WO 2002-FR2508	20020715

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG,

CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI FR 2001-10427 A 20010803

OS CASREACT 138:187400; MARPAT 138:187400

AB A process is claimed for the oxidn. of satd., (un)substituted, (cyclo)aliph. **hydrocarbons**, or alkylarom. **hydrocarbons**, and/or alcs. or ketones, to give acids or polyacids. The process uses **O2** as the **oxidizing** agent, in a liq. medium, in the presence of a manganese-based **catalyst** and an org. acid solvent component of formula Rn-Ar-CO2H [I; Ar = arom. radical of 1 or more condensed arom. rings.; n = 1-3; R = CR1R2R3 where R1, R2, R3 = C1-4 alkyl or F]. In comparison to the std. solvent (acetic acid), acids I provide simpler isolation of the acid products, as well as simplified recycling of **catalyst** and other advantages. This added solvent component may also contain addnl. substances, particularly nitriles, hydroxyimides, and halogenated (esp. fluorinated) substances; these can improve the productivity and/or selectivity of the reaction, e.g., by improving the dissoln. of **oxygen**. For example, cyclohexane was **oxidized** by atm. **O2** at 140.degree. and > 125 bar in the presence of Mn(acac)3 **catalyst**, cyclohexanone, and 4-tert-butylbenzoic acid (II), for approx. 35 min., to give 7.17% transformation of cyclohexane, with the following selectivities to acid products: adipic acid 53.6%, glutaric acid 11.8%, and succinic acid 3.5%. In a similar comparative expt., acid II gave a cyclohexane conversion of 3.64%, vs. 2.32% for 4-CF3C6H4CO2H, 1.65% for PhCO2H, and only 0.48% with no arom. acid solvent component.

ST oxidn hydrocarbon manganese **catalyst** arom org acid solvent; adipic acid prodn arom org acid solvent; cyclohexane cyclohexanol cyclohexanone oxidn **oxygen** manganese **catalyst** arom acid; benzoic acid tert butyl **trifluoromethyl solvent** oxidn cyclohexane

IT Hydrocarbons, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(alicyclic, substrate; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Aromatic hydrocarbons, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkyl, substrate; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Carboxylic acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(arom., solvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Perfluoro compounds
RL: NUU (Other use, unclassified); USES (Uses)
(carboxylic acids, cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Fluorides, uses
Nitriles, uses

Perfluorocarbons
RL: NUU (Other use, unclassified); USES (Uses)
(cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Perfluoro compounds
RL: NUU (Other use, unclassified); USES (Uses)
(esters, cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Aromatic compounds
RL: NUU (Other use, unclassified); USES (Uses)
(fluoro arenes, cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Amines, uses
Carboxylic acids, uses
Hydrocarbons, uses
Ketones, uses
Nitriles, uses
RL: NUU (Other use, unclassified); USES (Uses)
(fluoro, cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Imides
RL: NUU (Other use, unclassified); USES (Uses)
(hydroxy, cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Perfluoro compounds
RL: NUU (Other use, unclassified); USES (Uses)
(ketones, cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Perfluoro compounds
RL: NUU (Other use, unclassified); USES (Uses)
(nitriles, cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Halides
RL: NUU (Other use, unclassified); USES (Uses)
(org., cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT **Oxidation**
Oxidation catalysts
(**oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Amines, uses
Carboxylic acids, uses
Esters, uses
Ketones, uses
Nitriles, uses
RL: NUU (Other use, unclassified); USES (Uses)
(perfluoro, cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Carboxylic acids, preparation
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
(polycarboxylic, product; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Carboxylic acids, preparation
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
(product; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT Alcohols, reactions
Hydrocarbons, reactions
Ketones, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(substrate; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT 65-85-0, Benzoic acid, uses 65-85-0D, Benzoic acid, derivs. 98-73-7, 4-tert-Butylbenzoic acid 455-24-3, 4-(**Trifluoromethyl**)benzoic acid 725-89-3, 3,5-Bis(**trifluoromethyl**)benzoic acid 1320-04-3, Naphthoic acid 1320-04-3D, Naphthalenecarboxylic acid, derivs. 16225-26-6, 3,5-Di-tert-butylbenzoic acid
RL: NUU (Other use, unclassified); USES (Uses)
(acid **solvent**; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT 7440-45-1, Cerium, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-58-6, Hafnium, uses 7440-62-2, Vanadium, uses 7440-67-7, Zirconium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalyst** dopant; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT 7439-96-5, Manganese, uses 14284-89-0, Manganese tris(acetylacetonate)
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalyst**; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT 75-05-8, Acetonitrile, uses 98-08-8, .alpha.,.alpha.,.alpha.-Trifluorotoluene 100-47-0, Benzonitrile, uses 306-94-5,

Perfluorodecalin 307-24-4, Perfluorohexanoic acid **307-34-6**, Perfluorooctane 311-89-7, Perfluorotributylamine **335-57-9**, Perfluoroheptane 335-67-1, Perfluorooctanoic acid 335-67-1D, Perfluorooctanoic acid, alkyl esters 336-08-3, Perfluoroadipic acid 338-83-0, Perfluorotripropylamine 338-84-1, Perfluorotripentylamine 353-85-5, Perfluoroacetonitrile 355-02-2, Perfluoromethylcyclohexane **355-42-0**, Perfluorohexane 375-85-9, Perfluoroheptanoic acid 375-95-1, Perfluorononanoic acid 375-95-1D, Perfluorononanoic acid, alkyl esters 375-96-2, Perfluorononane 402-31-3, 1,3-Bis(trifluoromethyl)benzene 423-55-2, Perfluorooctyl bromide 434-64-0, Perfluorotoluene 507-63-1, Perfluorooctyl iodide 524-38-9, N-Hydroxyphthalimide 602-94-8, Pentafluorobenzoic acid 647-28-9, Perfluorooctanol 684-16-2, Perfluoroacetone 920-66-1, 1,1,1,3,3,3-Hexafluoro-2-propanol 2378-02-1, Perfluoro-tert-butanol 6066-82-6, N-Hydroxysuccinimide 7057-81-0, Perfluorohexanol 24427-67-6, Perfluoroisopropanol 51294-16-7, Perfluoromethyldecalin 71990-01-7, (Trifluoromethyl)benzoic acid 85758-71-0, Perfluorodecanol 85758-72-1, Perfluorononanol
RL: NUU (Other use, unclassified); USES (Uses)
(cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT 110-15-6P, Succinic acid, preparation 110-94-1P, Glutaric acid 124-04-9P, Adipic acid, preparation 693-23-2P, Dodecanedioic acid
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
(product; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT 108-93-0, Cyclohexanol, reactions 108-94-1, Cyclohexanone, reactions 110-82-7, Cyclohexane, reactions 294-62-2, Cyclododecane
RL: RCT (Reactant); RACT (Reactant or reagent)
(substrate; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

IT **307-34-6**, Perfluorooctane **335-57-9**, Perfluoroheptane **355-42-0**, Perfluorohexane
RL: NUU (Other use, unclassified); USES (Uses)
(cosolvent; **oxidn.** of hydrocarbons to acids by **oxygen** using manganese **catalysts** and arom. acid solvents, and use in prodn. of adipic acid from cyclohexane, cyclohexanol, and/or cyclohexanone)

RN 307-34-6 HCAPLUS
CN Octane, octadecafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

$F_3C-(CF_2)_6-CF_3$

RN 335-57-9 HCAPLUS
CN Heptane, hexadecafluoro- (6CI, 8CI, 9CI) (CA INDEX NAME)

$F_3C-(CF_2)_5-CF_3$

RN 355-42-0 HCAPLUS
CN Hexane, tetradecafluoro- (6CI, 8CI, 9CI) (CA INDEX NAME)

$F_3C-(CF_2)_4-CF_3$

L41 ANSWER 3 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 2002:609875 HCAPLUS
DN 137:156831
TI Composite Pd catalyst-based membrane system for production of hydrogen peroxide by direct oxidation of hydrogen without formation of explosive H2-**O2** mixtures
IN Choudhary, Vasant Ramchandra; Sansare, Subhash Dwarkanath; Gaikwad, Abaji Govind
PA Council of Scientific & Industrial Research, India
SO U.S., 13 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM C01B015-01
NCL 423584000
CC 49-8 (Industrial Inorganic Chemicals)
Section cross-reference(s): 38, 57
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6432376	B1	20020813	US 2000-655970	20000905
PRAI	US 2000-655970		20000905		

AB **Hydrogen** peroxide manuf. by direct oxidn. of **hydrogen** with **oxygen**, without the formation of explosive **H2-O2** mixts., is carried out using a tubular hydrophobic composite Pd-membrane catalyst system. The catalytic system is represented by the general formula: HPM/SOMF/MxPd1-x/IPM, in which: (1) HPM is a hydrophobic polymer membrane permeable to **H2**, **O2**, water vapor, and H2O2 vapor but impermeable to liq. water or aq. **soln.**; (2) SOMF is a surface-**oxidized** metal film comprising Pd, which is permeable only to **H2**, deposited on a metal alloy, MxPd1-x (M = Cu, Ag, Au, noble metals (other than Pd), x = 0.03-0.6), and (3) IPM is an inorg. porous membrane, typically a ceramic, which is permeable to all gases and vapors. The ceramic membrane (typically .alpha.-Al2O3 or ZrO2) is in the form of a tube, with thickness of .gtoreq.0.5 mm and internal diam. of .gtoreq.0.6 cm; the wt. of metal alloy per unit area of the ceramic membrane is 5.0-500 g/m2; the thickness of the surface-**oxidized** metal film is 0.05-5.0 .mu.m; and the wt. of the hydrophobic polymer membrane per unit area of the surface-**oxidized** metal film is 0.2-40 g/m2. A method was also described for the fabrication, pretreatment, and stabilization of the catalytic membrane unit, as well as the conditions for carrying out the direct oxidn. of **H2** to **hydrogen** peroxide.

ST hydrogen peroxide manuf hydrogen oxidn catalyst membrane; hydrophobic polymer ceramic catalyst membrane hydrogen peroxide manuf; palladium alloy membrane hydrogen peroxide manuf hydrogen oxidn

IT Silicone rubber, uses
RL: DEV (Device component use); USES (Uses)
(di-Me, trimethylolpropane-crosslinked, hydrophobic membrane side;

composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn**. of hydrogen without formation of explosive H2-**O2** mixts.)

IT Coating process
(electroless, in deposition of Pd alloys; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn**. of hydrogen without formation of explosive H2-**O2** mixts.)

IT **Fluoropolymers**, uses
Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(hydrophobic membrane side; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn**. of hydrogen without formation of explosive H2-**O2** mixts.)

IT **Oxidation** catalysts
(membrane; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn**. of hydrogen without formation of explosive H2-**O2** mixts.)

IT **Oxidation**
(surface, of metal films; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn**. of hydrogen without formation of explosive H2-**O2** mixts.)

IT Ceramic membranes
(tubular; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn**. of hydrogen without formation of explosive H2-**O2** mixts.)

IT **Palladium** alloy, base
RL: **CAT (Catalyst use)**; DEV (Device component use); USES (Uses)
(catalytic membrane system contg.; composite **Pd** catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn**. of hydrogen without formation of explosive H2-**O2** mixts.)

IT 1314-08-5, **Palladium** oxide (PdO) 7440-05-3, **Palladium**, uses 11122-08-0 12726-60-2, **Palladium** alloy, **Pd**, **Ag** 133422-42-1 134941-08-5 446030-94-0 446030-95-1
RL: **CAT (Catalyst use)**; DEV (Device component use); USES (Uses)
(catalytic membrane system contg.; composite **Pd** catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn**. of hydrogen without formation of explosive H2-**O2** mixts.)

IT 1314-23-4, Zirconia, uses 1344-28-1, Alumina, uses
RL: DEV (Device component use); USES (Uses)
(ceramic membrane; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn**. of hydrogen without formation of explosive H2-**O2** mixts.)

IT 24937-79-9, Polyvinylidene difluoride
RL: DEV (Device component use); USES (Uses)
(hydrophobic membrane side; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn**. of hydrogen without formation of explosive H2-**O2** mixts.)

IT 7722-84-1P, Hydrogen peroxide, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(manuf. of; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn**. of hydrogen without formation of explosive H2-**O2** mixts.)

IT 7601-90-3, Perchloric acid, uses 7647-01-0, Hydrochloric acid, uses 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses
RL: NUU (Other use, unclassified); USES (Uses)

(membrane catalyst system pretreated with; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn**. of hydrogen without formation of explosive H2-**O2** mixts.)

IT 1429-50-1, Ethylenediamine tetramethylenephosphonic acid 2809-21-4, 1-Hydroxyethylidene-1,1-diphosphonic acid 6419-19-8, Phosphonic acid, [nitrilotris(methylene)]tris- 7722-88-5, Sodium pyrophosphate 22036-77-7
RL: NUU (Other use, unclassified); USES (Uses)
(stabilizer, for hydrogen peroxide; composite Pd catalyst-based membrane system for prodn. of hydrogen peroxide by direct **oxidn**. of hydrogen without formation of explosive H2-**O2** mixts.)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; JP 1133909 1989
(2) Anon; EP 0504741 A1 1992 HCAPLUS
(3) Anon; DE 4127918 A1 1992 HCAPLUS
(4) Anon; WO 9314025 1993 HCAPLUS
(5) Anon; EP 0621235 A1 1994 HCAPLUS
(6) Anon; WO 9412428 1994 HCAPLUS
(7) Fu, L; Stud Surf Sci Catal 1992, V72, P33 HCAPLUS
(8) Gosser; US 4832938 A 1989 HCAPLUS
(9) Kawakami; US 5399334 A 1995 HCAPLUS
(10) Luckoff; US 5505921 A 1996 HCAPLUS
(11) Maraschino; US 5169618 A 1992 HCAPLUS
(12) Sun; US 4393038 A 1983 HCAPLUS
(13) Umiya, S; Journal of Membrane Science 1991, V56, P303

L41 ANSWER 4 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 2002:514249 HCAPLUS
DN 137:63022
TI Preparation of 2-butanone and 2-butanol from n-butane
IN Omori, Hideki; Haba, Kazuhiko
PA Maruzen Oil Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C07C027-12
ICS C07C031-12; C07C049-04; C07B061-00
CC 23-15 (Aliphatic Compounds)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002193856	A2	20020710	JP 2000-390667	20001222
	GB 2382075	A1	20030521	GB 2001-29467	20011207
	US 2002123654	A1	20020905	US 2001-12318	20011212
	US 6479707	B2	20021112		
PRAI	JP 2000-390667	A	20001222		

OS CASREACT 137:63022

AB 2-Butanone (I) and 2-butanol (II) are prepd. by oxidn. of **n-butane** (III) by mol. O in the presence of transition metal-contg. Al phosphates. III was **oxidized** using a V Al P Si oxide **catalyst** at 100.degree. under 4 MPa for 24 h to give I and II with 52.3% selectivity at 7.9% conversion.

ST butanone butanol prepn butane oxidn **catalyst**; transition metal aluminum phosphate **catalyst** oxidn butane; vanadium aluminum phosphate **catalyst** oxidn butane

IT Hydrocarbons, reactions

RL: RGT (Reagent); RACT (Reactant or reagent)
(fluoro, selectivity modifiers; prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

IT **Oxidation catalysts**
(prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

IT 209048-56-6P, Aluminum cobalt phosphorus oxide 439286-75-6P
439286-76-7P, Aluminum cobalt phosphorus silicon oxide 439286-77-8P
439286-78-9P, Aluminum copper phosphorus silicon oxide
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

IT 78-92-2P, 2-Butanol 78-93-3P, 2-Butanone, preparation
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
(prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

IT 106-97-8, n-Butane, reactions **7782-44-7, Oxygen,** reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

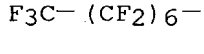
IT 110-86-1, Pyridine, reactions **307-34-6,** Perfluorooctane
7722-84-1, Hydrogen peroxide, reactions 7732-18-5, Water, reactions
RL: RGT (Reagent); RACT (Reactant or reagent)
(selectivity modifier; prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

IT **7782-44-7, Oxygen,** reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

RN 7782-44-7 HCAPLUS
CN Oxygen (8CI, 9CI) (CA INDEX NAME)

IT **307-34-6,** Perfluorooctane
RL: RGT (Reagent); RACT (Reactant or reagent)
(selectivity modifier; prepn. of butanone and butanol from butane using transition metal Al phosphate **catalysts**)

RN 307-34-6 HCAPLUS
CN Octane, octadecafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L41 ANSWER 5 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:693212 HCAPLUS
DN 135:244563
TI Preparation of an aqueous **solution** of hydrogen peroxide from hydrogen and **oxygen**
IN Devic, Michel
PA Atofina, Fr.

SO PCT Int. Appl., 29 pp.
CODEN: PIXXD2
DT Patent
LA French
IC ICM C01B015-029
ICS B01J008-20; B01J008-22; B01J008-00; B01J019-24; B01J008-06; C01B015-013
CC 49-8 (Industrial Inorganic Chemicals)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001068519	A1	20010920	WO 2001-FR449	20010215
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	FR 2806399	A1	20010921	FR 2000-3438	20000317
	FR 2806399	B1	20020913		
	EP 1263680	A1	20021211	EP 2001-907809	20010215
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	US 2003086853	A1	20030508	US 2002-221339	20020910
PRAI	FR 2000-3438	A	20000317		
	WO 2001-FR449	W	20010215		

OS MARPAT 135:244563

AB An aq. **soln.** of **hydrogen** peroxide is prepd. by injection of **hydrogen** and **oxygen** into an aq. acidic **soln.** in the presence of a dispersed **catalyst** and a tenside. The tenside stable under acidic and **oxidizing** conditions has the following general formula: CnF2n+1-Q-G or CnF2n+1-G with Q being a spacer and G a hydrophilic group. The concn. of the tenside in the reaction mixt. is 5-10 ppm to avoid foaming. An alk. metal bromide or hydrobromic acid (20-100 ppm) and bromine (2-10 ppm) are added to inhibit decompn. of the **hydrogen** peroxide. The **catalyst** consists of metals, such as **palladium**, **platinum**, **ruthenium**, rhodium, **iridium**, **osmium**, holmium or **gold**, preferably of **palladium** as the main component and **platinum** as the minor component. The bimetallic **catalyst** is supported on silica. The **catalyst** is prepd. by mixing the silica with a conc. **soln** . of the metal salts forming a paste, filtration and drying of the filtrate under conditions supporting slow crystn., redn. with **hydrogen** at 200-400 .degree.C, treatment of the solid with an acidic **soln.** (pH = 1-3) contg. bromide (20-100 mg/l) and bromine (2-20 mg/l) at 10-80 .degree.C, and subsequent filtration and drying at 100-140 .degree.C. The reaction for the prodn. of H2O2 is carried out in a stirred or tubular reactor at 30-60 .degree.C and 10-100 bars with a molar **hydrogen/oxygen** ratio < 0.0416. The aq. **soln.** is sepd. from the **catalyst** and additives by inverse osmosis using a polyamide membrane.

ST hydrogen peroxide prepn **oxygen** hydrogen; **catalyst** **palladium** **platinum** hydrogen peroxide prepn; surfactant stabilizer bromide bromine hydrogen peroxide prepn

IT Carboxylic acids, uses
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(**fluoro**, surfactant; prepn. of an aq. **soln**. of hydrogen peroxide from hydrogen and **oxygen**)

IT Surfactants
(**fluorosurfactants**; prepn. of an aq. **soln**. of hydrogen peroxide from hydrogen and **oxygen**)

IT **Oxidation**
(partial, reactors, tubular and stirred tank; prepn. of an aq. **soln**. of hydrogen peroxide from hydrogen and **oxygen**)

IT **Oxidation catalysts**
(partial; prepn. of an aq. **soln**. of hydrogen peroxide from hydrogen and **oxygen**)

IT Reverse osmosis
(prepn. of an aq. **soln**. of hydrogen peroxide from hydrogen and **oxygen**)

IT Alkali metal bromides
RL: NUU (Other use, unclassified); USES (Uses)
(stabilizer; prepn. of an aq. **soln**. of hydrogen peroxide from hydrogen and **oxygen**)

IT Fatty acids, uses
Sulfonic acids, uses
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(surfactant, fluorinated; prepn. of an aq. **soln**. of hydrogen peroxide from hydrogen and **oxygen**)

IT 7722-84-1P, Hydrogen peroxide, preparation
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(aq. **soln**. of; prepn. of an aq. **soln**. of hydrogen peroxide from hydrogen and **oxygen**)

IT 7631-86-9, Silica, uses
RL: **CAT (Catalyst use)**; NUU (Other use, unclassified); USES (Uses)
(**catalyst** support; prepn. of an aq. **soln**. of hydrogen peroxide from hydrogen and **oxygen**)

IT 7439-88-5, **Iridium**, uses 7440-04-2, **Osmium**, uses
7440-05-3, **Palladium**, uses 7440-06-4, **Platinum**, uses
7440-16-6, Rhodium, uses 7440-18-8, **Ruthenium**, uses
7440-57-5, **Gold**, uses 7440-60-0, Holmium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(prepn. of an aq. **soln**. of hydrogen peroxide from hydrogen and **oxygen**)

IT 7664-38-2, Phosphoric acid, uses
RL: NUU (Other use, unclassified); USES (Uses)
(prepn. of an aq. **soln**. of hydrogen peroxide from hydrogen and **oxygen**)

IT 1333-74-0, Hydrogen, reactions **7782-44-7, Oxygen**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of an aq. **soln**. of hydrogen peroxide from hydrogen and **oxygen**)

IT 7726-95-6, Bromine, uses 10035-10-6, Hydrobromic acid, uses
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(stabilizer; prepn. of an aq. **soln**. of hydrogen peroxide from hydrogen and **oxygen**)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Atochem Elf Sa; FR 2774674 A 1999 HCAPLUS
(2) Ausimont Spa; EP 0930269 A 1999 HCAPLUS
(3) Du Pont; WO 9204277 A 1992 HCAPLUS
(4) Fu, L; STUDIES IN SURFACE SCIENCE AND CATALYSIS 1992, V72, P33 HCAPLUS
(5) Gosser, L; US 4772458 A 1988 HCAPLUS
(6) Mitsubishi Gas Chemical Co; EP 0498166 A 1992 HCAPLUS
(7) Princeton Advanced Technology; WO 9605138 A 1996 HCAPLUS
IT **7782-44-7, Oxygen,** reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of an aq. **soln.** of hydrogen peroxide from hydrogen and **oxygen**)
RN 7782-44-7 HCAPLUS
CN Oxygen (8CI, 9CI) (CA INDEX NAME)

L41 ANSWER 6 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:676736 HCAPLUS
DN 135:227378
TI Method and **fluoroorganic solvents** for **oxidizing hydrocarbons** into carboxylic acids
IN Fache, Eric
PA Rhodia Polyamide Intermediates, Fr.
SO PCT Int. Appl., 19 pp.
CODEN: PIXXD2
DT Patent
LA French
IC ICM C07C051-31
ICS C07C055-14; C07C055-21
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 23, 48
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001066506	A1	20010913	WO 2001-FR685	20010307
	W: BR, BY, CA, CN, CZ, ID, IN, JP, KR, PL, RO, RU, SG, SK, UA, US, VN				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	FR 2806078	A1	20010914	FR 2000-2995	20000308
	EP 1265836	A1	20021218	EP 2001-913954	20010307
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
PRAI	FR 2000-2995	A	20000308		
	WO 2001-FR685	W	20010307		

AB **Hydrocarbons,** in particular satd. aliph. **hydrocarbons,** whether or not branched, cycloaliph., or alkylarom. **hydrocarbons** , are **oxidized** into carboxylic acid or polyacids. The oxidn. of cyclohexane into adipic acid with an **oxidizing** agent contg. mol. **oxygen** (e.g., **air**), in the presence of a fluorinated compd. solvent (e.g., PhCF3), enables easier sepn. and recycling of the unreacted cyclohexane from the oxidn. intermediates.
ST cyclohexane oxidn adipic acid manuf; hydrocarbon oxidn carboxylic acid manuf

IT Aromatic **hydrocarbons**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkyl; method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids)

IT Carboxylic acids, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(dicarboxylic; method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids)

IT Aromatic compounds
RL: NUU (Other use, unclassified); USES (Uses)
(**fluoro** arenes, **solvents**; method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids using)

IT Alcohols, uses
Carboxylic acids, uses
Hydrocarbons, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**fluoro, solvents**; method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids using)

IT Esters, uses
Nitriles, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**fluoro-, solvents**; method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids using)

IT Ethers, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**fluoroalkyl, solvents**; method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids using)

IT Phase separation
(liq.-liq.; method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids using)

IT **Oxidation**
(liq.-phase; method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids)

IT **Oxidation catalysts**
(liq.-phase; method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids using)

IT Carboxylic acids, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids)

IT Cycloalkanes
RL: RCT (Reactant); RACT (Reactant or reagent)
(method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids)

IT **Hydrocarbons**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids)

IT **Air**
Crystallization
(method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids using)

IT 124-04-9P, Adipic acid, preparation 693-23-2P, 1,12-Dodecanedioic acid
RL: IMF (Industrial manufacture); PREP (Preparation)

(method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids)
IT 21679-46-9, Cobalt trisacetylacetonate
RL: **CAT (Catalyst use)**; USES (Uses)
(method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids using)
IT 110-82-7, Cyclohexane, reactions 294-62-2, Cyclododecane **7782-44-7, Oxygen**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids using)
IT 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**solvent**; method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids)
IT 98-08-8, Benzotrifluoride 375-85-9, **Perfluoroheptanoic** acid
RL: **CAT (Catalyst use)**; USES (Uses)
(**solvent**; method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids using)
RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Costantini, M; US 5756837 A 1998 HCAPLUS
(2) Costantini, M; US 6147256 A 2000 HCAPLUS
(3) Dassel, M; WO 0046172 A 2000 HCAPLUS
(4) Kuhlmann, G; US 3947494 A 1976 HCAPLUS
(5) Nkk; JP 05286891 A 1993 HCAPLUS
(6) Rhone Poulenc Chimie; FR 2732678 A 1996 HCAPLUS
IT **7782-44-7, Oxygen**, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(method and **fluoroorg. solvents** for **oxidizing hydrocarbons** into carboxylic acids using)
RN 7782-44-7 HCAPLUS
CN Oxygen (8CI, 9CI) (CA INDEX NAME)

O=O

L41 ANSWER 7 OF 21 WPIX (C) 2003 THOMSON DERWENT
AN 2000-543466 [49] WPIX
DNC C2000-161721
TI Oxidation of **hydrocarbons** for making dibasic acids, comprises **oxidizing** the **hydrocarbon** in the presence of a fluorocompound.
DC A28 A32 A41 E19 F01
IN DASSEL, M W; DECOSTER, D C; VASSILIOU, E
PA (RPCR-N) RPC INC
CYC 91
PI WO 2000046172 A1 20000810 (200049)* EN 49p C07C051-31
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2000036974 A 20000825 (200059) C07C051-31

EP 1150938 A1 20011107 (200168) EN C07C051-31
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI
BR 2000008034 A 20011106 (200175) C07C051-31
KR 2001101783 A 20011114 (200230) C07C051-31
CN 1339021 A 20020306 (200236) C07C051-31
JP 2002536350 W 20021029 (200274) 71p C07C051-215

ADT WO 2000046172 A1 WO 2000-US3109 20000204; AU 2000036974 A AU 2000-36974 20000204; EP 1150938 A1 EP 2000-915753 20000204, WO 2000-US3109 20000204; BR 2000008034 A BR 2000-8034 20000204, WO 2000-US3109 20000204; KR 2001101783 A KR 2001-709904 20010804; CN 1339021 A CN 2000-803252 20000204; JP 2002536350 W JP 2000-597245 20000204, WO 2000-US3109 20000204

FDT AU 2000036974 A Based on WO 200046172; EP 1150938 A1 Based on WO 200046172; BR 2000008034 A Based on WO 200046172; JP 2002536350 W Based on WO 200046172

PRAI US 1999-118652P 19990204

IC ICM C07C051-215; C07C051-31
ICS C07C055-14; C07C063-15

ICA C07B061-00

AB WO 200046172 A UPAB: 20001006
NOVELTY - Intermediate oxidation products are prepared by **oxidizing** cyclohexane or o-, m- and/or p-xylene under controlled conditions in the presence of a small critical amount of **fluorocompound** co-**solvent**.
DETAILED DESCRIPTION - A **hydrocarbon** such as cyclohexane or o-, m- and/or p-xylene is **oxidized** to a respective acid by adding a fluorocompound to a reaction mixture containing a solvent and a cobalt **catalyst**.
USE - For making intermediate oxidation products especially dibasic acids.
ADVANTAGE - The fluorocompound increases the reaction rate without changing the relative **oxygen** consumption (claimed) and without sacrificing the yield, the selectivity and/or the control of the reaction.
Dwg.0/6

FS CPI

FA AB; DCN

MC CPI: A01-E11; A01-E12; E10-C02C1; E10-C02D2; E10-C04F; F01-D03; F01-D04; F01-D10

L41 ANSWER 8 OF 21 WPIX (C) 2003 THOMSON DERWENT

AN 2000-387757 [33] WPIX

CR 2001-244975 [25]

DNC C2000-117762

TI **Catalytic** dewaxing of hydrocarbon feed for the manufacture of lubricating base oils involves contacting the feed with a **catalyst** comprising metallosilicate crystallites, binder and a hydrogenation component.

DC H04

IN CREYGHTON, E J; CRIJNEN-VAN BEERS, M B H; DARNANVILLE, J; DUPREY, E; HUVE, L G; MESTERS, C M A M; REMANS, T J; VAN BALLEGOY, C M; BALLEGOY, C M; DIPREY, E

PA (SHEL) SHELL INT RES MIJ BV

CYC 91

PI WO 2000029511 A1 20000525 (200033)* EN 40p C10G045-64
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS

LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL
TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

AU	2000018594	A	20000605 (200042)		C10G045-64
EP	1137741	A1	20011004 (200158) EN		C10G045-64
	R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE				
CN	1330699	A	20020109 (200229)		C10G045-64
HU	2001004314	A2	20020328 (200234)		C10G045-64
ZA	2001003926	A	20020925 (200275)	26p	B01J000-00
JP	2002530470	W	20020917 (200276)	40p	C10G045-60
KR	2002040821	A	20020530 (200276)		B01J037-00
AU	754266	B	20021107 (200302)		C10G045-64
ZA	2002002368	A	20021224 (200309)	23p	B01J000-00

ADT WO 2000029511 A1 WO 1999-EP9024 19991112; AU 2000018594 A AU 2000-18594 19991112; EP 1137741 A1 EP 1999-962151 19991112, WO 1999-EP9024 19991112; CN 1330699 A CN 1999-814636 19991112; HU 2001004314 A2 WO 1999-EP9024 19991112, HU 2001-4314 19991112; ZA 2001003926 A ZA 2001-3926 20010515; JP 2002530470 W WO 1999-EP9024 19991112, JP 2000-582498 19991112; KR 2002040821 A KR 2002-703951 20020327; AU 754266 B AU 2000-18594 19991112; ZA 2002002368 A ZA 2002-2368 20020325

FDT AU 2000018594 A Based on WO 200029511; EP 1137741 A1 Based on WO 200029511; HU 2001004314 A2 Based on WO 200029511; JP 2002530470 W Based on WO 200029511; AU 754266 B Previous Publ. AU 200018594, Based on WO 200029511

PRAI EP 1999-402401 19990927; EP 1998-402839 19981116

IC ICM B01J000-00; B01J037-00; C10G045-60; C10G045-64
ICS B01J029-06; B01J029-44; B01J029-74; B01J037-18; C01B039-38; C01B039-42; C07C000-00; C10G045-62; C10G073-02

AB WO 200029511 A UPAB: 20030206
NOVELTY - **Catalytic** dewaxing of hydrocarbon feed comprising waxy molecules involves contacting the feed with a **catalyst** comprising metallosilicate crystallites, binder and hydrogenation component. The weight ratio of the metallosilicate crystallites and the binder is 5:95-35:65.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for (A) a process of preparing the **catalyst** composition by (a) preparing an extrudable mass of a homogenous mixture of metallosilicate crystallites, water, a source of low acidity refractory oxide binder as a mixture of powder and a sol, (b) extruding (a), (c) drying the extrudate from (b), and (d) calcining the dried extrudate; (B) a **catalyst** composition comprising at least a low acidity refractory oxide binder which is free of aluminum, metallosilicate crystallites and hydrogenation component; and (C) the use of the **catalyst** in a hydroconversion process.

USE - Used for the manufacture of lubricating base oils.

ADVANTAGE - The process provides high yield of base oil product at the same weight hourly space velocity (WHSV). Gas by-product formed in the process is lesser compared to solvent dewaxing process. The **catalyst** used is cheaper than the prior art.

Dwg.0/0

FS CPI
FA AB
MC CPI: H04-E; H04-F02E

L41 ANSWER 9 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:802796 HCAPLUS
DN 132:51439
TI Method for oxidation of organic compounds using organic imide **catalysts**

IN Hirai, Shigehisa
PA Daicel Chemical Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C07B033-00
ICS B01J031-02; B01J031-04; C07B041-00
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11349493	A2	19991221	JP 1998-170590	19980602
PRAI JP 1998-170590		19980602		

OS MARPAT 132:51439
AB The oxidn. is done with mol. O by using org. imide **catalysts** and a metal compd. at 10-85.degree. in an org. solvent where the metal compd. is used at 0-0.28 mol% based on the substrate. **Oxidizable** substrates are (a) compds. bearing C-H bond on position adjacent to a double bond, (b) methine carbon-contg. compds., (c) nonarom. cyclic **hydrocarbon**, (d) nonarom. alicyclic compds. bearing C-H bond on position adjacent to hetero atom, (e) conjugated compds., (f) alcs. or thiols, (g) ethers or thio ethers, (h) aldehydes or thio aldehydes, (i) amines and (j) arom. compds. Thus, heating cyclohexane 50 with N-hydroxyphthalimide (I) 9.69, Co(II) acetate tetrahydrate 0.296, and CH3CN 400 g under a N pressure of 33 kg/cm2 while mixing to 75.degree., displacing N with N and **air** under a pressure of 40 kg/cm2 and N hour space ratio 40, after treating for 4 h, displacing with N and cooling gave a mixt. contg. cyclohexanone (yield 14.1, selectivity 74.5%), cyclohexanol (yield 1.1%, selectivity 6%) and adipic acid (yield 1.85, selectivity 9.4%) and remained I 93.7%.
ST org mol oxygenation **catalyst** hydroxyphthalimide; oxidn **oxygen** mol phthalimide **catalyst** org substrate; hydrocarbon mol **oxygen** oxidn **catalyst** imide; alicyclic mol **oxygen** oxidn **catalyst** imide; alc mol **oxygen** oxidn **catalyst** imide; thio alc mol **oxygen** oxidn **catalyst** imide
IT Hydrocarbons, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(alicyclic, substrates; method for **oxidn**. of org. compds. using org. imide **catalysts**)
IT Hydrocarbons, uses
RL: NUU (Other use, unclassified); USES (Uses)
(halo, solvents; method for **oxidn**. of org. compds. using org. imide **catalysts**)
IT **Oxidation**
Oxidation catalysts
(method for **oxidn**. of org. compds. using org. imide **catalysts**)
IT Solvents
(org.; method for **oxidn**. of org. compds. using org. imide **catalysts**)
IT Imides
RL: **CAT (Catalyst use)**; USES (Uses)
(**oxidn**. **catalysts**; method for **oxidn**. of org. compds. using org. imide **catalysts**)
IT Metals, uses
RL: **CAT (Catalyst use)**; USES (Uses)

(**oxidn**. co-**catalysts**; method for **oxidn**. of org. compds. using org. imide **catalysts**)

IT Amides, uses
Carboxylic acids, uses
Esters, uses
Hydrocarbons, uses
Nitro compounds
Thiols (organic), uses
RL: NUU (Other use, unclassified); USES (Uses)
(solvents; method for **oxidn**. of org. compds. using org. imide **catalysts**)

IT Aldehydes, reactions
Amines, reactions
Aromatic hydrocarbons, reactions
Ethers, reactions
Thioethers
Unsaturated compounds
RL: RCT (Reactant); RACT (Reactant or reagent)
(substrates; method for **oxidn**. of org. compds. using org. imide **catalysts**)

IT Aldehydes, reactions
Aldehydes, reactions
Thiocarbonyl compounds
Thiocarbonyl compounds
RL: RCT (Reactant); RACT (Reactant or reagent)
(thioaldehydes, substrates; method for **oxidn**. of org. compds. using org. imide **catalysts**)

IT 108-93-0P, Cyclohexanol, preparation 124-04-9P, Hexanedioic acid, preparation 700-58-3P, 2-Adamantanone 5001-18-3P, 1,3-Adamantanediol 34352-74-4P, 4-(1-Hydroxy-1-methylethyl)biphenyl 38638-39-0P, Isopropenylbiphenyl
RL: IMF (Industrial manufacture); PREP (Preparation)
(byproducts; method for **oxidn**. of org. compds. using org. imide **catalysts**)

IT 1314-62-1, Vanadium oxide, uses 6147-53-1, Cobalt(II) acetate tetrahydrate 6156-78-1, Manganese(II) acetate tetrahydrate 13476-99-8 15077-39-1, Cobalt(II)acetylacetonate dihydrate
RL: **CAT (Catalyst use)**; USES (Uses)
(co-**catalysts**; method for **oxidn**. of org. compds. using org. imide **catalysts**)

IT 524-38-9, N-Hydroxyphthalimide
RL: **CAT (Catalyst use)**; USES (Uses)
(**oxidn**. **catalysts**; method for **oxidn**. of org. compds. using org. imide **catalysts**)

IT 92-91-1P, 4-Acetylbiphenyl 108-94-1P, Cyclohexanone, preparation 768-95-6P, Tricyclo[3.3.1.13,7]decan-1-ol
RL: IMF (Industrial manufacture); PREP (Preparation)
(products; method for **oxidn**. of org. compds. using org. imide **catalysts**)

IT 64-19-7, Acetic acid, uses 75-05-8, Acetonitrile, uses 98-08-8, **Trifluoromethylbenzene** 100-47-0, Benzonitrile, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**solvents**; method for **oxidn**. of org. compds. using org. imide **catalysts**)

IT 110-82-7, Cyclohexane, reactions 281-23-2, Adamantane 25640-78-2, Isopropylbiphenyl
RL: RCT (Reactant); RACT (Reactant or reagent)
(substrate; method for **oxidn**. of org. compds. using org.

imide **catalysts**)

L41 ANSWER 10 OF 21 WPIX (C) 2003 THOMSON DERWENT
AN 1999-580283 [49] WPIX
DNC C1999-168775
TI Preparation of **catalysts** for oxidation of alcohols, e.g. steroids, allylic alcohols, rethynol, terpens and carbohydrates, e.g. sodium methylapproximatelyc-D-glucopyranoside uranate.
DC A60 A97 E17 E19 J04
IN AVNIR, D; BLUM, J; DEGANELLO, G; PAGLIARO, M
PA (CNDR) CONSIGLIO NAZ DELLE RICERCHE; (YISS) YISSUM RES & DEV CO; (CHTE-N) IST DI CHIM & TECHNOLOGIA DEI PROD NATUR; (YISS) YISSUM RES DEV CO HEBREW UNIV JERUSALEM
CYC 86
PI WO 9947258 A1 19990923 (199949)* EN 29p B01J031-02
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW
AU 9934420 A 19991011 (200008)
IT 1299146 B 20000229 (200201) B01J021-00
ADT WO 9947258 A1 WO 1999-IT63 19990318; AU 9934420 A AU 1999-34420 19990318; IT 1299146 B IT 1998-RM172 19980318
FDT AU 9934420 A Based on WO 9947258
PRAI IT 1998-RM172 19980318
IC ICM B01J021-00; B01J031-02
ICS B01J037-03; C07B033-00; C07C051-235
AB WO 9947258 A UPAB: 19991124
NOVELTY - A process for the preparation of **catalysts** for oxidation of alcohols, by entrapment of stable nitroxyl radicals in sol-gel glassy matrices, comprising:

(a) preparing a polymerizing mixture containing a monomer, water and an alcohol which promotes the mixing of the monomer and the water;

(b) adding 2,2,6,6-piperidin-1-oxyl (TEMPO), precursors or derivatives;

(c) adding water to the the mixture; and

(d) hydrolizing and polycondensing the monomers to obtain a gel.

DETAILED DESCRIPTION - The monomer is of formula (I):

M(R)n-(P)m (I)

M = a semi-metallic or a metal element;

R = a hydrolyzable substituent; n = 1-6;

P = a non-polymerizable substituent;

m = 0-6

Also claimed is a process for the preparation of reactive solgel materials by the entrapment of stable nitroxyl radicals, comprising:

(a) polymerizing at least 1 monomer of formula (I) (a metal- or semi-metal alkoxide, metal ester or semi-metal ester), in the presence of stable di-tertiary-alkyl nitroxyl radicals (or precursors) of formula (II), to form a gel at room temperature, containing the trapped dopant;

(b) drying under low pressure (under 70 mmHg, preferably 15 mmHg);

(c) liophilisation to yield an areogel powder;

(d) mild heat treatment (less than 100 deg. C, preferably at 45 deg. C) at atmospheric pressure to form a porous xerogel, coating of the gel on a mesoporous inorganic oxide (e.g. pumice stones); and

(e) solvent removal at low pressure (preferably 15 mmHg):

A = 2-3 atom chain, preferably carbon atoms (methylene groups) or a

combination of 1-2C with **oxygen** or nitrogen
USE - The **catalysts** are useful for oxidation of primary and secondary alcohols (e.g. steroids, allylic alcohols, rethynol, terpens and carbohydrates) to produce carboxylic acids, ketones and aldehydes (claimed). The **catalysts** are especially useful in the carbohydrate industry, e.g. for preparation of sodium methyl gamma -D-glucopyranoside uranate by oxidation of methyl gamma -D-glucopyranoside (in examples). Nitroxyl radicals are used for regioselective oxidation of prim. alcohols of soluble polymeric carbohydrates, e.g. starch, inulin and pullulan and, e.g. for high yield (91%) oxidation of E-retinol to E-retinal.
ADVANTAGE - The new **catalysts** are efficient, recyclable (e.g., after simple filtration and washing with water), and none of the doped **catalyst** leaches out during use. The doped porous glasses allow the entrapped molecules to retain their physical and chemical properties and permit accessibility to external reagents through the pore network. The inorganic matrix is chemically and thermally inert; has a high surface area; and the entrapped molecules show enhanced stability, by contrast with organic polymer supports. Nitroxyl radicals are costly and moderately toxic, so their entrapment is advantageous for ease of recovery and recycling.
Dwg.0/0
FS CPI
FA AB; GI; DCN
MC CPI: A02-A; A12-W11K; E05-E; E07-H; E10-C04; E10-D01; E10-E04; E10-F02; J04-E04A; N05-D

L41 ANSWER 11 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1998:555725 HCAPLUS
DN 129:202856
TI Preparation of fluorine-containing aromatic tetracarboxylic dianhydride as materials for polyimides
IN Maeda, Kazuhiko; Tanida, Setsuo; Yamashita, Tsuneo; Shitakawa, Kazuhiro
PA Sumikin Kako Co., Ltd., Japan; Daikin Industries, Ltd.
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C07D307-89
ICS B01J027-08; C07B061-00
CC 27-7 (Heterocyclic Compounds (One Hetero Atom))
Section cross-reference(s): 35
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 10226681	A2	19980825	JP 1997-32220	19970217
PRAI JP 1997-32220		19970217		

OS CASREACT 129:202856
AB 1,1,1,3,3,3-Hexafluoro-2,2-di(3,4-dicarboxyphenyl)**propane** dianhydride (I) is prepd. by oxidn. of 1,1,1,3,3,3-hexafluoro-2,2-di(3,4-dimethylphenyl)**propane** (II) with mol. O in AcOH or AcOH/Ac2O solvent in the presence of the **catalysts** contg. Co **catalysts** and Br compds. with Br/Co mol ratio of 0.5-1.5 and dehydration of an intermediate tetracarboxylic acid in Ac2O. II was **oxidized** in the presence of Co acetate tetrahydrate and KBr in AcOH under **air** at 170.degree. for 2 h, dehydrated in AcOH/Ac2O at 130.degree. for 1 h, and crystd. to give 81.2% I with 99.2% purity contg. 9 ppm Co.

ST fluorodicarboxyphenylpropane dianhydride prepn material polyimide; methylphenylpropane oxidn cobalt bromine **catalyst**

IT Polyimides, preparation
RL: PNU (Preparation, unclassified); PREP (Preparation)
(prepn. of fluorine-contg. arom. tetracarboxylic dianhydride as materials for polyimides)

IT **Oxidation catalysts**
(prepn. of hexafluorodi(dicarboxyphenyl)propane dianhydride by **oxidn.** of hexafluorodi(dimethylphenyl)propane and dehydration)

IT 3016-76-0P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(in dehydration; prepn. of hexafluorodi(dicarboxyphenyl)propane dianhydride by **oxidn.** of hexafluorodi(dimethylphenyl)propane and dehydration)

IT 5931-89-5, Cobalt acetate 7758-02-3, Potassium bromide, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(**oxidn. catalyst**; prepn. of hexafluorodi(dicarboxyphenyl)propane dianhydride by **oxidn.** of hexafluorodi(dimethylphenyl)propane and dehydration)

IT 1107-00-2P
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
(prepn. of hexafluorodi(dicarboxyphenyl)propane dianhydride by **oxidn.** of hexafluorodi(dimethylphenyl)propane and dehydration)

IT 108-24-7, Acetic anhydride
RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(prepn. of hexafluorodi(dicarboxyphenyl)propane dianhydride by **oxidn.** of hexafluorodi(dimethylphenyl)propane and dehydration)

IT 65294-20-4
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of hexafluorodi(dicarboxyphenyl)propane dianhydride by **oxidn.** of hexafluorodi(dimethylphenyl)propane and dehydration)

IT 64-19-7, Acetic acid, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**solvent**; prepn. of **hexafluorodi**(dicarboxyphenyl)propane dianhydride by **oxidn.** of hexafluorodi(dimethylphenyl)propane and dehydration)

L41 ANSWER 12 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1996:713017 HCAPLUS
DN 125:328146
TI Method for **oxidizing hydrocarbons**, alcohols or ketones by heterogeneous **catalysis** using manganese-containing **catalysts**.
IN Costantini, Michel; Fache, Eric; Gilbert, Laurent
PA Rhone-Poulenc Fiber and Resin Intermediates, Fr.
SO PCT Int. Appl., 19 pp.
CODEN: PIXXD2
DT Patent
LA French
IC ICM C07C051-31
ICS C07C055-14; C07C051-215; C07C051-235; C07C051-245
CC 24-5 (Alicyclic Compounds)
Section cross-reference(s): 35, 45
FAN.CNT 1
PATENT NO. KIND DATE APPLICATION NO. DATE

PI	WO 9631455	A1	19961010	WO 1996-FR515	19960404
	W: BR, BY, CA, CN, CZ, JP, KR, MX, PL, RU, SG, SK, UA, US, VN				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	FR 2732678	A1	19961011	FR 1995-4428	19950407
	FR 2732678	B1	19970523		
	CA 2215472	AA	19961010	CA 1996-2215472	19960404
	EP 819110	A1	19980121	EP 1996-912067	19960404
	R: BE, DE, FR, GB, IT, NL				
	BR 9604863	A	19980526	BR 1996-4863	19960404
	CN 1183760	A	19980603	CN 1996-193786	19960404
	JP 10505867	T2	19980609	JP 1996-530042	19960404
PRAI	FR 1995-4428		19950407		
	WO 1996-FR515		19960404		

OS CASREACT 125:328146

AB A method is provided for liq.-phase oxidn. of hydrocarbons, alcs., or ketones, in the presence of a Mn-based heterogeneous **catalyst**. In particular, the method enables oxidn. of the above compds. to carboxylic acids using **O2** or an **O2**-contg. gas, in an at-least-partial **solvent** for the product, and in the presence of a heterogeneous **catalyst** comprising at least Mn atoms incorporated into the crystal lattice of a mol. sieve. The liq. phase comprises a **solvent** generally selected from polar protic and polar aprotic **solvents**, and particularly from carboxylic acids and esters thereof. For example, cyclohexane was autoclaved over a Mn aluminophosphate **catalyst** (prepn. from Mn acetate and Al isopropoxide given) in the presence of AcOH and a small amt. of CH3CHO, under 100 bar **air** at 105.degree. for 3 h, to give a cyclohexane conversion of 6.1%, a combined yield of cyclohexanol/cyclohexanone/adipic acid of 90.2%, and a selectivity of 57.4% for adipic acid. In contrast, use of a prior art Mn zeolite **catalyst** [Mn-exchanged HY zeolite] gave only 1.5% conversion and no adipic acid.

ST oxidn hydrocarbon alc ketone manganese **catalyst**; zeolite manganese **catalyst** oxidn cyclohexane; adipic acid manuf manganese oxidn **catalyst**; carboxylic acid manuf manganese oxidn **catalyst**; cyclohexanol manuf oxidn manganese **catalyst**; cyclohexanone manuf oxidn manganese **catalyst**

IT Alcohols, preparation
Ketones, preparation
RL: BYP (Byproduct); IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(byproduct and substrate; **oxidn**. of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Molecular sieves
(**catalyst**; **oxidn**. of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Borosilicates
RL: **CAT (Catalyst use)**; USES (Uses)
(manganese, **catalyst**; **oxidn**. of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT **Oxidation**
Oxidation catalysts
(**oxidn**. of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Carboxylic acids, preparation
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

(product; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Esters, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**solvent; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Alkanes, reactions
Alkenes, reactions
Cycloalkanes
Cycloalkenes
Hydrocarbons, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(substrate; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(Mn, **catalyst; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Aromatic hydrocarbons, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkyl, substrate; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(borosilicate, manganese, **catalyst; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT **Perfluoro** compounds
RL: NUU (Other use, unclassified); USES (Uses)
(carboxylic acids, **solvent; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(ferrisilicate, manganese, **catalyst; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Silicates, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(ferro-, manganese, **catalyst; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Silicates, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(gallo-, manganese, **catalyst; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(gallosilicate, manganese, **catalyst; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(manganese aluminophosphate (MnAPO), **catalyst; oxidn**. of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Carboxylic acids, uses

RL: NUU (Other use, unclassified); USES (Uses)
(**perfluoro, solvent; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(silicalite, manganese, **catalyst; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(silicoaluminophosphate (SAPO), manganese, **catalyst; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT 108-93-0P, Cyclohexanol, preparation 108-94-1P, Cyclohexanone, preparation
RL: BYP (Byproduct); IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(byproduct and substrate; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT 7439-96-5D, Manganese, zeolites contg.
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalyst; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT 7439-89-6, Iron, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-15-5, **Rhenium**, uses 7440-18-8, **Ruthenium**, uses 7440-25-7, Tantalum, uses 7440-31-5, Tin, uses 7440-33-7, Tungsten, uses 7440-45-1, Cerium, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-56-4, Germanium, uses 7440-58-6, Hafnium, uses 7440-62-2, Vanadium, uses 7440-67-7, Zirconium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(cocatalyst; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT 124-04-9P, Adipic acid, preparation
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
(product; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT 64-19-7, Acetic acid, uses 126-33-0, Sulfolane 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**solvent; oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

IT 110-82-7, Cyclohexane, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(substrate; **oxidn.** of hydrocarbons, alcs., or ketones by heterogeneous manganese-contg. **catalysts**)

L41 ANSWER 13 OF 21 WPIX (C) 2003 THOMSON DERWENT
AN 1994-167323 [20] WPIX
DNC C1994-076659
TI Phenolic cpds. prepn. from hydroperoxide(s) - by acidic decomposition using fluoro-boric, silicic or phosphoric acid, giving high yield and purity.
DC B05 E14
IN ARAKI, S; HASHIMOTO, I; IWASAKI, H; MUKAIYAMA, T; OHNO, H
PA (MITC) MITSUI PETROCHEMICAL IND LTD; (MITC) MITSUI PETROCHEM IND CO LTD; (MITA) MITSUI CHEM INC

CYC 20
PI WO 9410115 A1 19940511 (199420)* JA 21p C07C039-04
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
W: CA KR US
JP 06199718 A 19940719 (199433) 7p C07C039-04
EP 622350 A1 19941102 (199442) EN 11p C07C039-04
R: DE FR GB IT NL
EP 622350 A4 19941221 (199543) C07C039-04
US 5475157 A 19951212 (199604) 6p C07C037-08
EP 622350 B1 19980415 (199819) EN 8p C07C039-04
R: DE FR GB IT NL
DE 69318007 E 19980520 (199826) C07C039-04
KR 281849 B 20010215 (200212) C07C039-04
JP 3364287 B2 20030108 (200306) 6p C07C039-04
ADT WO 9410115 A1 WO 1993-JP1586 19931101; JP 06199718 A JP 1993-253344 19931008; EP 622350 A1 EP 1993-923680 19931101, WO 1993-JP1586 19931101; EP 622350 A4 EP 1993-923680 ; US 5475157 A WO 1993-JP1586 19931101, US 1994-256245 19940902; EP 622350 B1 EP 1993-923680 19931101, WO 1993-JP1586 19931101; DE 69318007 E DE 1993-618007 19931101, EP 1993-923680 19931101, WO 1993-JP1586 19931101; KR 281849 B WO 1993-JP1586 19931101, KR 1994-702312 19940704; JP 3364287 B2 JP 1993-253344 19931008
FDT EP 622350 A1 Based on WO 9410115; US 5475157 A Based on WO 9410115; EP 622350 B1 Based on WO 9410115; DE 69318007 E Based on EP 622350, Based on WO 9410115; KR 281849 B Previous Publ. KR 94703798, Based on WO 9410115; JP 3364287 B2 Previous Publ. JP 06199718
PRAI JP 1992-296146 19921105
REP EP 1043; JP 54052041; JP 57095930; JP 58032831; JP 60084235; JP 67001538; JP 74045854; US 3720716; US 4119791; US 4358618; US 4434305; DE 1493977; GB 2071662
IC ICM C07C037-08; C07C039-04
ICS B01J027-12; B01J027-16; C07C039-06; C07C039-07; C07C039-08; C07C045-53
ICA C07B061-00
AB WO 9410115 A UPAB: 19940705
Aromatic hydroxyl cpds. Ar(OH)n (I) are prepd. by the acidic decomposition of a hydroperoxide of formula (II): (where Ar is an n-valent aromatic gp.; n is 1 or 2) using an acid **catalyst** tetrafluoroboric acid, hexafluorosilicic acid or hexafluorophosphoric acid (pref. at 20 ppm. to 5% wt. of the reaction mixt.). The reaction may be carried out in two stages; the first is at 50-95 deg.C. until the hydroperoxide concn. falls below 1% wt., and the second is at 80-120 deg.C., until the hydroperoxide concn. falls below 0.1%.

USE/ADVANTAGE - The aromatic hydroxy cpds. obtd. are synthetic intermediates, esp. for synthetic resins, agrochemicals, drugs and dyestuffs. The prod. is obtd. in high yield with low formation of hydroxyacetone by-prod..

In an example, cumene was **air** oxidised at 100-110 deg.C. in the presence of aq. sodium carbonate. The oily prod. was sepd. and evaporated to give a prod. contg. 80.39% wt. cumene hydroperoxide. This was introduced to a reactor at 120ml/hr. together with 42% aq. **tetrafluoroboric** acid as a 1% **soln.** in acetone (52ml/hr.), giving a **catalyst** concn. of 1200 ppm. Reaction was at 75 deg.C. with residence time 20 minutes. The prod. was neutralised with sodium carbonate. The yield of phenol was 97% molar, and the hydroxyacetone content 390ppm. In a comparison reaction using sulphuric acid as the **catalyst** (2000ppm concn). the yield of phenols was 95% and the hydroxyacetone content 8700ppm.
Dwg.0/0

FS CPI
FA AB; GI; DCN
MC CPI: B10-E02; E10-E02A; E10-E02B1; E10-E02B2; N01-D01; N01-D03; N04-B

L41 ANSWER 14 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1991:231483 HCAPLUS
DN 114:231483
TI Sulfuric acid recovery, especially from ferrous sulfate-containing waste acid from the manufacture of titania
IN Matsumoto, Yukiei; Hayashi, Takanobu
PA Permelec Electrode Ltd., Japan
SO Ger. Offen., 5 pp.
CODEN: GWXXBX
DT Patent
LA German
IC ICM C01B017-69
ICS B01D011-04
CC 49-2 (Industrial Inorganic Chemicals)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 4026446	A1	19910228	DE 1990-4026446	19900821
	JP 03080103	A2	19910404	JP 1989-212936	19890821
	JP 2650065	B2	19970903		
	AU 9061164	A1	19910418	AU 1990-61164	19900820
	AU 621508	B2	19920312		
	US 5051187	A	19910924	US 1990-570488	19900821
PRAI	JP 1989-212936		19890821		

AB The process comprises electrolytically **oxidizing** the Fe(II) into Fe(III) ions, and removing the Fe(III) ions from the acid solns. by extn. using a solvent and an extn. agent. Thus, 1 L 20-wt.% H2SO4 contg. 20 g Fe/L (as FeSO4) was electrolyzed using a Ru2O-coated Ti anode, a SUS 304 cathode, and a **hydrocarbon** polymer membrane, at 10 A/dm3 for 3 h. The resulting Fe(III) ions were extd. with a **soln.** of 60 g **thenoyltrifluoroacetone** in 200 mL C6H6 to give H2SO4 contg. 50 ppm Fe, vs. 2050 and 1800 ppm for solns. only **oxidized** with H2O2 and NOx, resp.
ST sulfuric acid purifn titania manuf; ferrous sulfate oxidn sulfuric acid; electrolytic oxidn ferrous iron; ferric sulfate extn sulfuric acid; benzene solvent extractant ferric sulfate; thenoyltrifluoroacetone extn agent benzene
IT **Oxidation**, electrochemical
(of ferrous sulfate, in waste sulfuric acid from titania manuf., for ferric sulfate removal by extn.)
IT 7722-84-1, Hydrogen peroxide, uses and miscellaneous **7782-44-7**, **Oxygen**, uses and miscellaneous 7782-50-5, Chlorine, uses and miscellaneous 7790-92-3, Hypochlorous acid 10028-15-6, Ozone, uses and miscellaneous 11104-93-1, Nitrogen oxide, uses and miscellaneous
RL: USES (Uses)
(**oxidn.** in presence of, electrolytic, of ferrous sulfate)
IT 7720-78-7P, Ferrous sulfate
RL: RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(**oxidn.** of, electrolytic, in waste sulfuric acid from titania manuf., for ferric sulfate removal by extn.)
IT 10028-22-5, Ferric sulfate
RL: REM (Removal or disposal); PROC (Process)
(removal of, from waste sulfuric acid from titania manuf., by extn., electrolytic **oxidn.** of ferrous sulfate for)

IT 78-93-3, MEK, uses and miscellaneous
RL: USES (Uses)
(solvents contg., extn. with, of ferric sulfate, from waste sulfuric acid from titania manuf., electrolytic **oxidn.** of ferrous sulfate for)
IT 13463-67-7P, Titania, preparation
RL: PREP (Preparation)
(waste sulfuric acid from manuf. of, iron removal from, by electrolytic **oxidn.** and extn.)
IT 7664-93-9P, Sulfuric acid, preparation
RL: PREP (Preparation)
(waste, from titania manuf., iron removal from, by electrolytic **oxidn.** and extn.)
IT **7782-44-7, Oxygen,** uses and miscellaneous
RL: USES (Uses)
(**oxidn.** in presence of, electrolytic, of ferrous sulfate)
RN 7782-44-7 HCAPLUS
CN Oxygen (8CI, 9CI) (CA INDEX NAME)

L41 ANSWER 15 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1990:177811 HCAPLUS
DN 112:177811
TI Fluorine-19 NMR study of the reaction of p-fluorobenzenethiol and disulfide with periodate and other selected oxidizing agents
AU Evans, Brian J.; Doi, Joyce Takahashi; Musker, W. Kenneth
CS Dep. Chem., Univ. California, Davis, CA, 95616, USA
SO Journal of Organic Chemistry (1990), 55(8), 2337-44
CODEN: JOCEAH; ISSN: 0022-3263
DT Journal
LA English
CC 22-7 (Physical Organic Chemistry)
OS CASREACT 112:177811
AB The products of the reactions of both p-fluorobenzenethiol and p-fluorobenzene disulfide with oxidants were examd. using 19F NMR. Two commonly used mild oxidants (periodate and **hydrogen** peroxide), a non-**oxygen**-transfer oxidant [tetranitromethane (TNM)], and a strong metal oxidant [**Au**(III)] were examd. in several solvent systems. Under the conditions of our expts. disulfides are not **oxidized** by periodate, peroxide, or TNM. **Au**(III) is the only reagent that both **oxidizes** thiols and cleaves disulfides to sulfonic acids at room temp. In the periodate oxidn. of thiols, the products depends on the solvent and can be best explained if the reaction of periodate with a nucleophilic sulfur atom results in the formation of a complex or mixed anhydride. In aq. dioxane the products are disulfide and thiosulfonate. The thiosulfonate is formed by the reaction of sulfinic acid with sulfenic acid and not from the oxidn. of disulfide. In anhyd. ethanol, the products are Et sulfinate and the disulfide. Et sulfinate is formed by the reaction of a sulfinic/iodic acid anhydride with ethanol. The products in aq. ethanol appear to be a combination of the products obsd. in aq. dioxane and anhyd. ethanol. A thiosulfinate/periodate complex may also account for ester formation and other products obsd. during the oxidn. of unsym. thiosulfinates. Even though **hydrogen** peroxide is the most common oxidant for converting a thiol to disulfide,

it appears to be one of the poorer reagents to use, since the reaction yields sulfonic acid as well as disulfide. With TNM a sulfenyl nitrite is formed initially and then either reacts with thiol to give disulfide or isomerizes to a nitrosonium sulfenate to give thiosulfinate and thiosulfonate.

ST fluorine NMR oxidn product; fluorobenzenethiol oxidn periodate mechanism; **solvent** effect oxidn **fluorobenzene** disulfide

IT **Oxidation**
(of fluorobenzenethiol and its disulfide analog, mechanism of)

IT Nuclear magnetic resonance
(of fluorobenzenethiol, its disulfide analog, and their **oxidn**. products, fluorine-19 and proton)

IT **Solvent** effect
(on **oxidn**. of **fluorobenzenethiol** and its disulfide analog)

IT Coupling reaction
(oxidative, of fluorobenzenethiol, mechanism with agents for)

IT 369-51-7 824-80-6 2905-15-9 61169-14-0 125568-44-7 125568-47-0, p-Fluorobenzenesulfonic acid
RL: PRP (Properties)
(NMR of)

IT 541-41-3, Ethylchloroformate
RL: PROC (Process)
(conversion of, to Et fluorobenzenesulfinate)

IT 1333-74-0 7782-41-4
RL: PRP (Properties)
(nuclear magnetic resonance, of fluorobenzenethiol, its disulfide analog, and their **oxidn**. products, fluorine-19 and proton)

IT 509-14-8, Tetranitromethane 937-14-4, m-Chloroperbenzoic acid 7722-84-1, Hydrogen peroxide, reactions 7790-28-5, Sodium periodate 65201-77-6, Tetrabutylammonium periodate
RL: RCT (Reactant); RACT (Reactant or reagent)
(**oxidn**. by, of **fluorobenzenethiol**, mechanism and **solvent** effect on)

IT 16903-35-8
RL: RCT (Reactant); RACT (Reactant or reagent)
(**oxidn**. by, of fluorothiophenol or its disulfide analog, mechanism and solvent effect on)

IT 371-42-6, p-Fluorobenzenethiol 405-31-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(**oxidn**. of, fluorine-19 NMR and solvent effect on)

IT 368-88-7P
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of)

L41 ANSWER 16 OF 21 WPIX (C) 2003 THOMSON DERWENT
AN 1988-147580 [21] WPIX
DNC C1988-065752
TI Process for producing alkyl group-substd. aromatic hydrocarbon(s) - enables prodn. with high yield and high selectivity.
DC A41 B05 C03 E14
IN ISHIBASHI, M; KURANO, Y; SAKAMOTO, N; TAKAHATA, K; TAKAI, T; TANAKA, M; TANIGUCHI, K
PA (MITC) MITSUI PETROCHEM IND CO LTD; (TANI-I) TANIGUCHI K
CYC 14
PI WO 8803523 A 19880519 (198821)* JA
RW: AT BE CH DE FR GB IT LU NL SE
W: US

JP 63122636 A 19880526 (198827)
EP 288582 A 19881102 (198844) EN
R: AT BE CH DE FR GB IT LI LU NL SE
US 4891465 A 19900102 (199009) 11p
EP 288582 B1 19920902 (199236) EN 19p C07C002-66
R: AT BE CH DE FR GB IT LI LU NL SE
DE 3781547 G 19921008 (199242) C07C002-66
JP 06104630 B2 19941221 (199504) 6p C07C015-00

ADT WO 8803523 A WO 1987-JP864 19871110; JP 63122636 A JP 1986-268049 19861111; EP 288582 A EP 1987-907350 19871110; US 4891465 A US 1988-221246 19880706; EP 288582 B1 EP 1987-907350 19871110, WO 1987-JP864 19871110; DE 3781547 G DE 1987-3781547 19871110, EP 1987-907350 19871110, WO 1987-JP864 19871110; JP 06104630 B2 JP 1986-268049 19861111

FDT EP 288582 B1 Based on WO 8803523; DE 3781547 G Based on EP 288582, Based on WO 8803523; JP 06104630 B2 Based on JP 63122636

PRAI JP 1986-268049 19861111

REP 1.Jnl.Ref; JP 60001141; JP 60174730; US 4361713; US 4581215; GB 2144447

IC ICM C07C002-66; C07C015-24
ICS C07C002-86; C07C015-02; C07C015-14; C07C015-16; C07C037-08; C07C039-15; C07C043-26; C07C043-263; C07C067-08; C07C069-16

ICA B01J029-18; C07B061-00

AB WO 8803523 A UPAB: 19930923
This improved process for producing alkyl group-substd. aromatic **hydrocarbons** comprises reacting an aromatic **hydrocarbon** (1) with an alkylating agent (2) in the presence of a mordenite zeolite **catalyst** treated with a fluorine-contg. cpd.

The alkylating agent (2) is selected from olefins, aliphatic lower alcohols, and alkyl halides (pref. **propylene**). The pref. aromatic **hydrocarbon** (1) is biphenyl, dibiphenyl or naphthalene. The typical product is p,p'-diisopropylbiphenyl. The fluorine-contg. cpds. can be **hydrogen** fluoride, ammonium fluoride, CF3Cl, SF6. As an example, 4,4'-dihydroxybiphenyl is produced by the acid-decomposition of 4,4'-diisopropyl biphenyldihydroperoxide which is obtd. by **oxidising** 4,4'-diisopropylbiphenyl with **oxygen** molecules. The above 4,4'-diisopropylbiphenyl is reacted with acylising agent to obtain 4,4'-diacyloxybiphenyl.

USE/ADVANTAGE - The process allows the conversion yield of the alkylating reaction of the aromatic **hydrocarbon** to be raised and also allows a high selectivity. Useful as the intermediate for obtg. dyes, medicines, agricultural medicines, and as the material for liquid-crystal polymers.

88065752

FS CPI

FA AB

MC CPI: A01-E13; B10-E02; C10-E02; E10-J02B3; N06-A

L41 ANSWER 17 OF 21 HCAPLUS COPYRIGHT 2003 ACS

AN 1988:521440 HCAPLUS

DN 109:121440

TI Ammonium fluoroperoxomonophosphate dihydrate, [NH4]2[PO2(**O2**)F].2H2O. First chemical synthesis of a fluorinated peroxophosphate

AU Bhattacharjee, Manish; Chaudhuri, Mihir K.

CS Dep. Chem., North-East. Hill Univ., Shillong, 793003, India

SO Journal of the Chemical Society, Dalton Transactions: Inorganic Chemistry (1972-1999) (1988), (7), 2005-6
CODEN: JCDTBI; ISSN: 0300-9246

DT Journal

LA English

CC 78-5 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 21

AB [NH4]2[PO2(O2)F].cntdot.2H2O was prepd. from the reaction of [NH4][H2PO4] with 48% HF and 30% H2O2 at pH 10-11, maintained by the addn. of aq. ammonia, at an ice-bath temp. The compd. was characterized by chem. anal., **IR** and laser-Raman spectroscopic studies. It is capable, in presence of acid, of **oxidizing hydrocarbons**, alcs., olefins, and SO2.

ST org compd oxidn fluoroperoxophosphate; phosphate fluoro peroxo ammonium; peroxophosphate fluoro ammonium; fluorophosphate peroxo ammonium; oxidn property fluoroperoxophosphate

IT Oxidizing agents
(fluoroperoxophosphate as)

IT Alcohols, reactions
Alkenes, reactions
Hydrocarbons, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(**oxidn.** of, by **fluoroperoxophosphate** in acidic **soln.**)

IT 15181-43-8P, Fluorotrioxophosphate(2-)
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in fluoroperoxophosphate **oxidn.** of org. compds.)

IT 67-63-0, 2-Propanol, reactions 71-36-3, Butanol, reactions 100-42-5, Styrene, reactions 110-83-8, Cyclohexene, reactions 120-12-7, Anthracene, reactions 7446-09-5, Sulfur dioxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(**oxidn.** of, by **fluoroperoxophosphate** in acid **soln.**)

IT 116240-85-8P, Diammonium fluorodioxo(peroxo)phosphate(2-)
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and vibrational spectra and oxidizing property of)

IT 1336-21-6, Ammonium hydroxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with ammonium dihydrogen phosphate and hydrofluoric acid and hydrogen peroxide, fluoroperoxophosphate by)

IT 7722-84-1, Hydrogen peroxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with ammonium dihydrogen phosphate and hydrofluoric acid in aq. ammonia, fluoroperoxophosphate by)

IT 7664-39-3, Hydrofluoric acid, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with ammonium dihydrogen phosphate and hydrogen peroxide in aq. ammonia, fluoroperoxophosphate by)

IT 7722-76-1, Ammonium dihydrogen phosphate
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, with hydrofluoric acid and hydrogen peroxide and aq. ammonia, fluoroperoxophosphate by)

L41 ANSWER 18 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1988:157152 HCAPLUS
DN 108:157152
TI Oxidative recovery of **palladium catalysts** in acetic acid or **trifluoroacetic** acid **solutions**
IN Murakami, Kazumi; Yamada, Rikuo; Tanimoto, Hirotoshi; Matsuo, Yoshio
PA Babcock-Hitachi K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
IC ICM B01J038-52
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 45
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 62225251	A2	19871003	JP 1986-69313	19860327
PRAI	JP 1986-69313		19860327		

AB The title method entails the use of an **oxidizing** agent from an O-coordinated complex of MmXn.cntdot.Ll (M = Group IB, IVB-VIIB, or VIII element; X = an anion such as Cl-, Br-, I-, BF4-, PF6-, and SO42-; L = org. P compds. (e.g., alkyl, alkoxy, or amide derivs. of H3PO4 or H2PHO3) or nitriles; m, n = integers, l = coordination no.) with alkali metal salt(s) AY (A = Li, Na, or K; Y = Cl-, Br-, I-, AcO-, or CF3COO-). An O-coordinated complex was formed by supplying **air** to a CuCl.cntdot.PhCN complex soln. which was prepd. from CuCl, PhCN, sulfolane, LiCl, AcOH, and **ethylene** glycol monomethyl ether. **Pd**(0) was completely **oxidized** to **Pd**(2) (e.g., **Pd**(AcO)2) at 70.degree. in 2 min. The method was useful in oxidn. of olefins.

ST **palladium catalyst** oxidn recovery; **oxygen** coordinated metal complex recovery; alkali metal salt recovery; copper chloride benzonitrile complex **oxygen** coordination; acetic acid **catalyst** oxidn recovery; fluoroacetic acid **catalyst** oxidn recovery; lithium chloride **catalyst** oxidn recovery; sulfolane **catalyst** oxidn recovery; olefin oxidn **catalyst** **palladium** recovery; acetate **palladium** oxidn recovery

IT **Catalysts** and **Catalysis**
(oxidative recovery of **palladium** for)

IT **Oxidation catalysts**
(oxidative recovery of **palladium** for, for olefin **oxidn.**)

IT Alkali metals, compounds
RL: USES (Uses)
(salts, oxidative recovery of **palladium** with)

IT 126-33-0P, Sulfolane 546-89-4P, Lithium acetate 2923-17-3P, Lithium **trifluoroacetate** 67-68-5P, uses and miscellaneous 68-12-2P, DMF, uses and miscellaneous 7447-41-8P, Lithium chloride (LiCl), uses and miscellaneous 7550-35-8P, Lithium bromide 7647-14-5P, Sodium chloride, uses and miscellaneous 7705-07-9DP, Titanium chloride (TiCl3), compds. with benzonitrile and **oxygen** 7718-98-1DP, Vanadium chloride (VCl3), compds. with benzonitrile and **oxygen** 7758-89-6DP, Copper chloride (CuCl), compds. with benzonitrile and **oxygen** 26445-81-8P, Dimethylsulfolane
RL: PREP (Preparation)
(oxidative recovery of **palladium** in **soln.** with, for **catalysts**)

IT 64-19-7P, uses and miscellaneous 76-05-1P, Trifluoroacetic acid, uses and miscellaneous
RL: PREP (Preparation); USES (Uses)
(oxidative recovery of **palladium** in, for **catalysts**)

IT 3375-31-3P, **Palladium** acetate
RL: PREP (Preparation)
(recovery of, by **oxidn.** with **oxygen**-coordinated metal complex)

IT 42196-31-6P, **Palladium** trifluoroacetate

RL: PREP (Preparation)
(recovery of, by **oxidn.** with **oxygen**-coordinated methanol complex)

L41 ANSWER 19 OF 21 WPIX (C) 2003 THOMSON DERWENT
AN 1986-233778 [36] WPIX
DNC C1986-100525
TI Prepn. of crystalline aromatic polyether ketone with reduced viscosity - by polycondensing aromatic di hydroxy cpd. and aromatic di halo ketone, and mono hydroxy halo aromatic ketone, in aromatic ketone solvent.
DC A25
IN FUKAWA, I; TANABE, T
PA (ASAH) ASAHI KASEI KOGYO; (ASAH) ASAHI CHEM IND CO LTD; (ASAH) ASAHI KASEI KOGYO KK
CYC 10
PI EP 193187 A 19860903 (198636)* EN 32p
R: BE DE FR GB IT NL
JP 61197632 A 19860901 (198641)
JP 62007729 A 19870114 (198708)
JP 62007730 A 19870114 (198708)
US 4757126 A 19880712 (198830)
CA 1262000 A 19890926 (198945)
EP 193187 B 19900613 (199024)
R: BE DE FR GB IT NL
DE 3671905 G 19900719 (199030)
JP 05027648 B 19930421 (199319) 7p C08G065-40
JP 05028245 B 19930423 (199319) 7p C08G065-40
JP 05058014 B 19930825 (199337) 7p C08G065-40
ADT EP 193187 A EP 1986-102516 19860226; JP 61197632 A JP 1985-36288 19850227; JP 62007729 A JP 1985-146650 19850705; JP 62007730 A JP 1985-146651 19850705; US 4757126 A US 1986-833076 19860226; JP 05027648 B JP 1985-36288 19850227; JP 05028245 B JP 1985-146650 19850705; JP 05058014 B JP 1985-146651 19850705
FDT JP 05027648 B Based on JP 61197632; JP 05028245 B Based on JP 62007729; JP 05058014 B Based on JP 62007730
PRAI JP 1985-36288 19850227; JP 1985-146650 19850705; JP 1985-146651 19850705
REP EP 143407; FR 2335548; US 4051109
IC C08G008-02; C08G014-00; C08G065-40
AB EP 193187 A UPAB: 19930922
A crystalline aromatic polyether ketone with reduced viscosity at least 0.6, is prepd. by polycondensing an aromatic dihydroxy cpd., with an aromatic dihaloketone, in a solvent with formulae (I) or (II), in presence of an alkali.

In formulae (I) and (II), R1, R2, R3 = H, 1-3C alkyl, or Ph; X = O, S or a direct bond; Y = O or a ketone gp.; n = 0 or 1.

Aromatic dihaloketone is a difluoroketone. The 2 monomers may be replaced by a monohydroxy monohalo aromatic ketone or an alkali metal salt, esp. a **monofluoro** cpd. In **solvents**, (I) X = O or S, or (II) n = 0, or n = 1 and Y = CO. The pref. alkali is an alkali metal (bi)carbonate.

USE/ADVANTAGE - Polyether ketone has high mol. wt., and excellent resistance to heat and chemicals, and good mechanical strength. The solvent is stable at high temp., accelerates the polymerisation, has no oxidising action, and in many cases is industrially available. The polymer is soluble in the solvent, giving easy stirring and suppression of gel formation due to local overheating. Prodn. of non-uniform polymers, e.g. with branched structure, is avoided. Use of the polymers is as shaped

articles, films, fibres, fibrils, or coatings, or for blends with other polymers, or for reinforced composites, e.g. with glass, C or aramide fibres, CaCO3 or Ca silicate.
0/0
FS CPI
FA AB; GI
MC CPI: A02-A07; A05-H07; A05-J10; A08-S02

L41 ANSWER 20 OF 21 WPIX (C) 2003 THOMSON DERWENT
AN 1979-60689B [33] WPIX
TI Electrolysis of aq. alkali metal salt soln. - with oxidation of hydrogen in the cathode chamber using **oxygen**-contg. gas, esp. **oxygen**-enriched **air**.
DC E36 J03
PA (TOKU) TOKUYAMA SODA KK
CYC 1
PI JP 54084893 A 19790706 (197933)*
PRAI JP 1977-152333 19771220
IC C25B001-46
AB JP 54084893 A UPAB: 19930901
In the electrolysis of an aq. alkali metal salt soln. the formation of **H2** is prevented by **oxidising H2** in the cathode chamber using a gas contg. 30 to 60 vol. % of **oxygen** as **oxidising** agent.
Typically an electrolysis cell having an effective electrode area of 0.5 dm2 is used. The anode is made by coating **ruthenium** oxide on Ti mesh and the cathode is made by adhering a porous film of teflon (RTM) on the surface of Cu mesh plated with **Ag**, on which a wet mixt. of activated carbon and **Pd** is pressed under about 100 kg/cm2 and dried. Between the electrodes, sulphonic acid type cation exchange membrane of **perfluorocarbon** series is arranged.
5N NaCl **soln**. is used in the anode chamber and 6N NaOH soln. in the cathode chamber and electrolysis is effected respectively at a current density of 20 and 30 A/dm2 at 80 degrees C. A gas mixt. of **O2** and N2 whose **O2** concn. is 20 to 100 vol. % is fed from the back side of the cathode chamber. In this case, the variation of cathode potential to partial pressure of **O2** is large between and **O2** concn. of 30 and 60 vol. %.
FS CPI
FA AB
MC CPI: E31-B01; E33-A; J03-B

L41 ANSWER 21 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1970:85662 HCAPLUS
DN 72:85662
TI Electrodes for fuel cells
PA Shell Internationale Research Maatschappij N. V.
SO Neth. Appl., 7 pp.
CODEN: NAXXAN
DT Patent
LA Dutch
IC H01M
CC 77 (Electrochemistry)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI NL 6810347		19700126	NL	19680722

AB Fuel-cell or **air**-depolarized cell electrodes are made of a high

resistance porous material as substrate to a layer of porous material with cond. much better than that of the electrolyte. The high-resistance substrate can be foam plastic; the conducting layer can act as a **catalyst**. The mean pore diam. is 1-8 .mu., and the layer thickness, 0.5-20 .mu.. The pressure of the fuel and **oxidizer** gases is generally 0.15 atm above the electrolyte pressure. The useful pressure range can be extended by spraying the electrode with poly(**tetrafluoroethylene**) or a **soln.** thereof known as Hilflon. A fuel cell with **H2, O2,** or **air** and 6M KOH electrolyte was equipped with electrodes with a Porvic (microporous poly(vinyl chloride)) substrate coated with porous **Ag** protected by **Rh** coated with a sputtered **catalyst** of C and 10% **Pd.** Sheets of the electrode material were sprayed with Hilflon aerosol on the **catalyst** side to 1-2 mg/cm2 dry coating.

ST fuel cells electrodes; electrodes fuel cells; **air** depolarized electrodes fuel cells

IT Fuel cells
(electrodes, with polymer substrates)

IT Electrodes
(fuel-cell, with polymer substrates)

IT 9002-84-0, uses and miscellaneous 9002-86-2, uses and miscellaneous
RL: USES (Uses)
(in fuel-cell electrodes)